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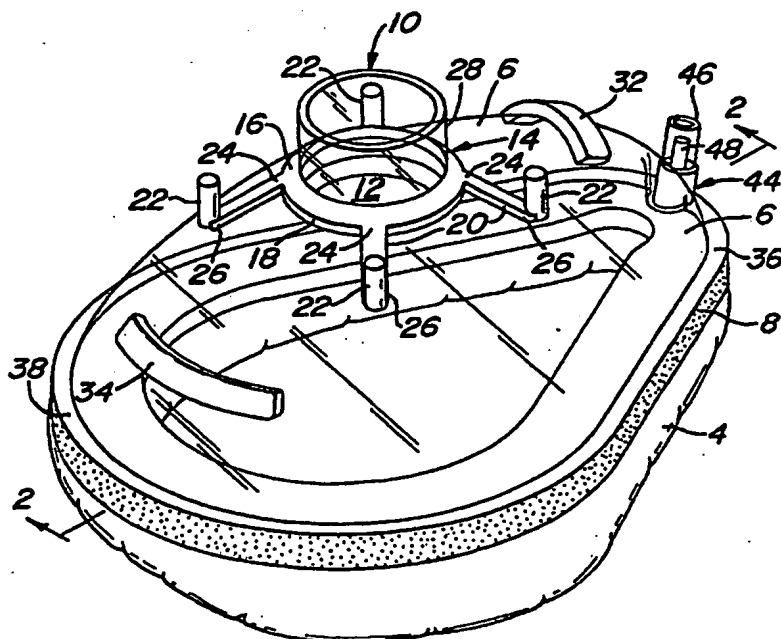
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(21) International Application Number: <b>PCT/US96/13612</b> (22) International Filing Date: <b>21 August 1996 (21.08.96)</b> (30) Priority Data: <b>08/519,037</b> <b>24 August 1995 (24.08.95)</b> <b>US</b> (71)(72) Applicant and Inventor: <b>TIRER, Samuel [US/US]; 431 Anthwyn Road, Narberth, PA 19072 (US).</b> (74) Agent: <b>BERKOWITZ, Michael, J.; Caesar, Rivise, Bernstein, Cohen &amp; Pokotilow, Ltd., Seven Penn Center, 12th floor, 1635 Market Street, Philadelphia, PA 19103-2212 (US).</b>	(81) Designated States: <b>CA, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</b>  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: **ANESTHESIA MASK**

(57) Abstract

An anesthesia mask (2) has finger grips (32, 34) attached to an extending from the rigid transparent cover of the mask (2) to enable the physician or other attending medical personnel to firm grasp the mask (2) and hold it in place on the face of the patient (50). The mask (2) has a central port (12) through which gas can be provided and an inflatable resilient skirt (4) which is placed in contact with the face of the patient allowing for a soft compliant seal.



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ANESTHESIA MASKSPECIFICATIONBACKGROUND OF THE INVENTION

This invention relates generally to an anesthesia mask and more specifically to an anesthesia mask with means for firmly holding the mask on the patient's face during the delivery of anesthesia to a patient.

Various types of anesthesia masks are known. United States Patent No. 2,317,603 (Hudbrink) discloses a mask using elastic straps at the bridge of the nose and below the chin of the patient to attach the mask firmly to the head of the patient.

United States Patent No. 2,666,432 (Stanton) discloses an anesthesia mask with a transparent plastic central portion and an inflatable skirt.

United States Patent No. 3,357,426 (Cohen) discloses a face mask which uses pressure-sensitive adhesives to hold the mask on the face of the patient.

United States Patent No. 4,337,767 (Yahata) discloses a disposable anesthesia mask with a relatively rigid central portion and an elastomeric peripheral portion.

A disposal mask with a rigid surface, which has a notch on the outer surface of the mask for receiving a finger on one side of the mask to assist in holding the mask in place is marketed by Intertech Resources, Inc. of Lincolnshire, Illinois.

However, there is a need for an anesthesia mask with a more positive means for allowing the mask to be held firmly in place during the dispensing of anesthesia to a patient.

OBJECTS OF THE INVENTION

Accordingly, it is the general object of the instant invention to provide an anesthesia mask which improves upon present anesthesia masks.

It is a further object of the instant invention to provide an anesthesia mask which is easy to apply to a patient, is comfortable, and conforms to the facial features of the patient.

It is still a further object of the instant invention to provide an anesthesia mask with an improved means for placing and firmly holding the mask on the face of the patient.

It is still yet a further object of the instant invention to provide an anesthesia mask which provides an effective air-tight seal when the mask is in place.

#### SUMMARY OF THE INVENTION

These and other objects of the instant invention are achieved by providing an anesthesia mask with an oval shaped central rigid face member connected to a skirt member. The rigid central member includes a gas entry port and finger grips which enable the mask to be placed and firmly held to the face of the patient during the dispensing of anesthesia.

#### DESCRIPTION OF THE DRAWINGS

Other objects and many of the intended advantages of this invention will be readily appreciated when the same becomes better understood by reference to the following detailed description, when considered in connection with the accompanying drawings, wherein:

Fig. 1 is an isometric view of the anesthesia mask of the instant invention;

Fig. 2 is a vertical sectional view of the anesthesia mask applied to the face of a patient taken along the line 2-2 of Fig. 1; and

Fig. 3 is a sectional view of the anesthesia mask taken along the line 3-3 of Fig. 2.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in greater detail to the various Figs. of the drawings, wherein reference characters refer to like parts, there is shown in Figs. 1 - 3 the anesthesia mask 2 of the instant invention. The anesthesia mask 2 comprises an inflatable skirt member 4, a dome-shaped rigid cover section 6 and a connection band 8 which connects the inflatable skirt member 4 to the rigid cover member 6. As can be seen in the Figs., the mask has an oval peripheral shape to conform to the face of a patient. The cover member 6 includes a projecting cylindrical section 10 which defines an inlet port 12.

The anesthesia mask 2 also comprises a strap connector 14, which has a ring 16 with a peripheral surface 18, extensions 20 and pegs 22. The extensions 20 comprise distal ends 24 which are connected to the peripheral surface 18 and proximal ends 26 at which the pegs 22 are connected. As can be seen in Fig. 1, there are four extensions 20 with four pegs 22 to which straps may be attached (not shown). The straps may be wrapped around the head of the patient to hold the mask 2 in place.

The cover member 6, which may be made of a clear, transparent plastic, has an outer surface 40, and inner surface 42, an upper gripper 32 and a lower gripper 34.

Referring again to Figs. 1 and 2, an upper gripper 32 is attached to the outer surface 40 above the inlet port 12 while a lower gripper 34 is attached to the outer surface 40 below the inlet port 12. Any suitable adhesive or other bonding material or method can be used for attaching the upper and lower grippers 32 and 34 to the outer surface 40 of the cover member 6.

Although the embodiment shown here discloses two grippers 32 and 34 located above and below the inlet port 12, it should be kept in mind that a single gripper, (e.g., a circumferential gripper) or more than two grippers, may be used and the gripper or grippers can be positioned at other convenient locations.

As can be seen in Figs. 1 and 3, the cover member 6 has a narrower distal portion 36 and a wider proximal portion 38. The oval shape of the anesthesia mask is intended to fit the face of the patient (Fig. 3) by placing the narrower distal portion 36 at the bridge of the nose 52 and the wider proximal portion 38 at the chin 54 of the patient 50. The anesthesia mask 2 also comprises a valve member 44, which includes a cylindrical valve projection 46 and a valve stem 48, positioned at the distal portion 36. Thus, a source of gas pressure can be applied to the valve member 44 to inflate the inflatable skirt member 4 resulting in a soft, pliable and form fitting skirt member which is in contact with the face of the patient when the mask is applied.

The cylindrical projection 10 has an outer surface 28 and an inner surface 30. The strap connector 14 is removably placed on the anesthesia mask 2 by sliding the strap connector 14 over the cylindrical projection 10 with the inner surface of the ring 16 in contact with the outer surface 28 of the cylindrical projection 10.

When anesthesia masks are used, the mask is usually held by the physician or other medical attendants against the face of the patient. The mask must be pressed against the face of the patient to assure that it is air tight. Because the mask has a smooth curved, dome-shaped surface it is often slippery and difficult to hold and the holder becomes fatigued. Although the straps may be attached to hold the mask in place, there is the danger that the straps may be made too tight or too loose. The anesthesia mask of this invention enables the mask to be held firmly in place for extended periods of time through the use of finger grips attached to the rigid cover member of the mask.

An anesthesia mask has been described which improves upon existing masks by enabling the physician or other attending medical personnel to firmly grasp the mask and hold it in position for extended periods of time through the use of finger grips attached to the rigid cover member of the mask.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current or future knowledge, readily adapt the same for use under the very conditions of service.

CLAIMS

1. A mask (2) for providing gas to a patient (50) characterised in that said mask (2) comprises:

(a) a skirt member (4) being substantially oval-shaped around its periphery; and

(b) a rigid cover member (6) connected to said skirt member (4), said cover member (6) being substantially oval-shaped around its periphery and conforming to the shape of said skirt member (4), said cover member (6) further comprising:

(i) an outer convex surface (40);

(ii) a cylindrical member (10) projecting outwardly from said cover member (6) and defining a port (12) for admitting the gas; and

(iii) at least one finger grip (32, 34), said finger grip (32, 34) being provided on said outer surface (40), said finger grip (32, 34) projecting outwardly from said outer surface (40), to enable grasping and firm holding of said mask (2) in position when providing gas to said patient (50).

2. The anesthesia mask (2) of Claim 1 characterised in that said skirt member (4) is made of a flexible, resilient material.

3. The anesthesia mask (2) of Claim 2 characterised in that said skirt member (4) is inflatable.

4. The anesthesia mask (2) of Claim 3 further comprising means for inflating said skirt member (4) comprising a valve member (44) connected to said skirt member (4).

5. The anesthesia mask (2) of Claim 2 further comprising a connector member between said skirt member (4) and said cover member (6).

6. The anesthesia mask (2) of Claim 2 characterised in that said cover member (6) comprises transparent plastic material.

7. The anesthesia mask (2) of Claim 2 characterised in that said at least one finger grip (32, 34) is arcuate in shape.

8. The anesthesia mask (2) of Claim 7 characterised in that said cylindrical member (10) comprises an inner surface (30) and an outer surface (28) and said anesthesia mask (2) further comprises a means for attaching straps (14) to the mask (2).

9. The anesthesia mask (2) of Claim 8 characterised in that said means for connected straps (14) to said mask (2) comprises a strap connector comprising a ring (16) with an inner and an outer peripheral surface (18), said ring (16) being positioned with said inner peripheral surface in contact with said outer surface (28) of said cylindrical member (10), said strap connector further comprising a plurality of extensions (20) each having a proximal end (24), connected to said outer peripheral surface (18), and a distal end (26), and a plurality of pegs (22), each of said pegs (22) connected to a respective one of said plurality of extensions (20) at said distal end (26).

10. The anesthesia mask (2) of Claim 9 characterised in that said skirt member (4) is inflatable.

11. The anesthesia mask (2) of Claim 10 further comprising means for inflating said skirt member comprising a valve member (44) connected to said skirt member (4).

12. The anesthesia mask (2) of Claim 11 further comprising a connector member (8) between said skirt member (4) and said cover member (6).

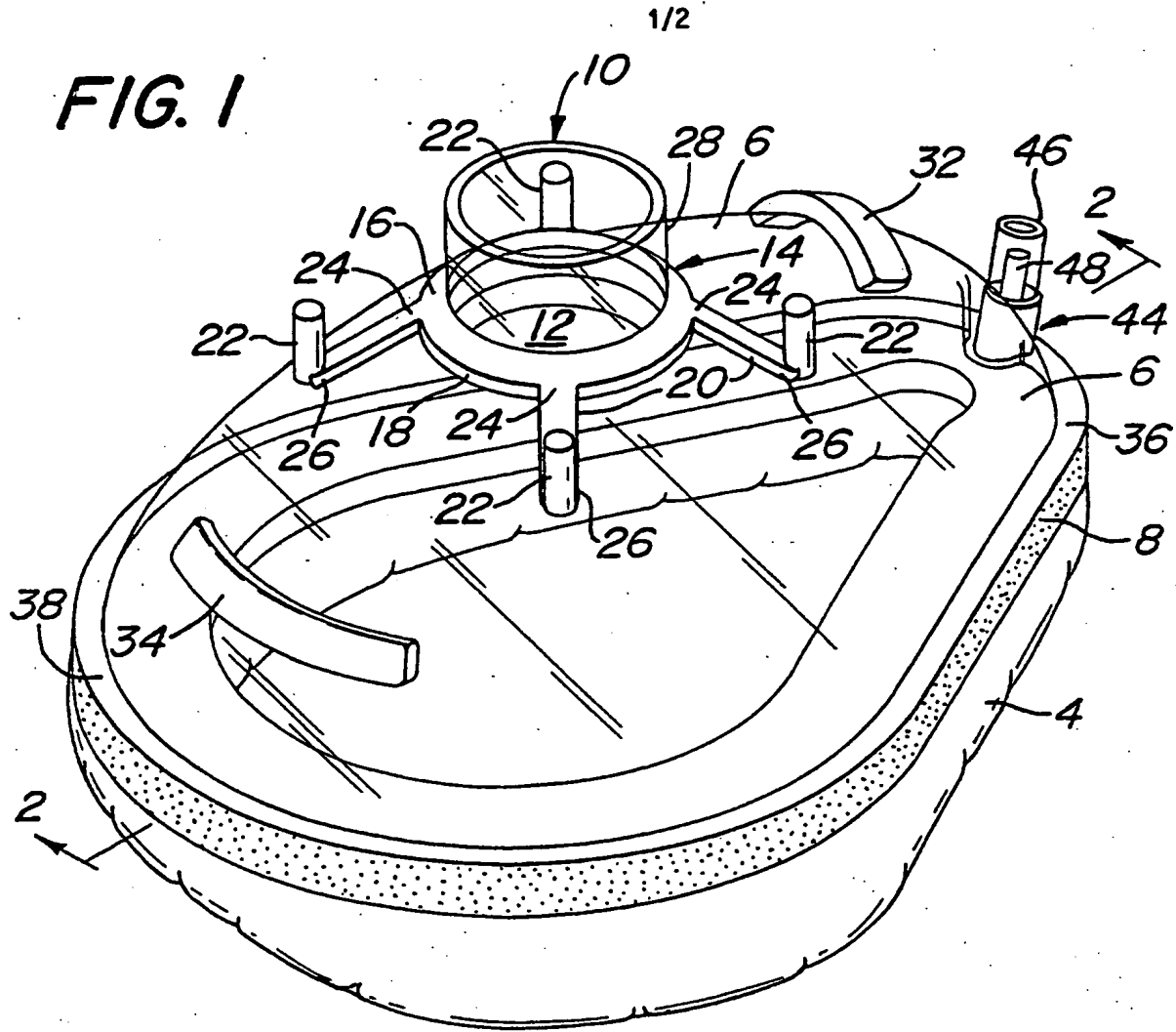
13. The anesthesia mask (2) of Claim 12 characterised in that said cover member (6) comprises transparent plastic material.

14. The anesthesia mask (2) of Claim 1 characterised in that said at least one finger grip (32, 34) comprises a first finger grip (32) and a second finger grip (34) to enable grasping and firm holding of said mask (2) in position during the delivery of the gas, said first and second finger grips (32, 34) being provided on opposite sides of said cylindrical member (10).



15. The anesthesia mask (2) of Claim 14 characterised in that said first finger grip (32) is provided above said cylindrical member (10) and said second finger grip (34) is provided below said cylindrical member (10).

**FIG. 1**



**FIG. 3**

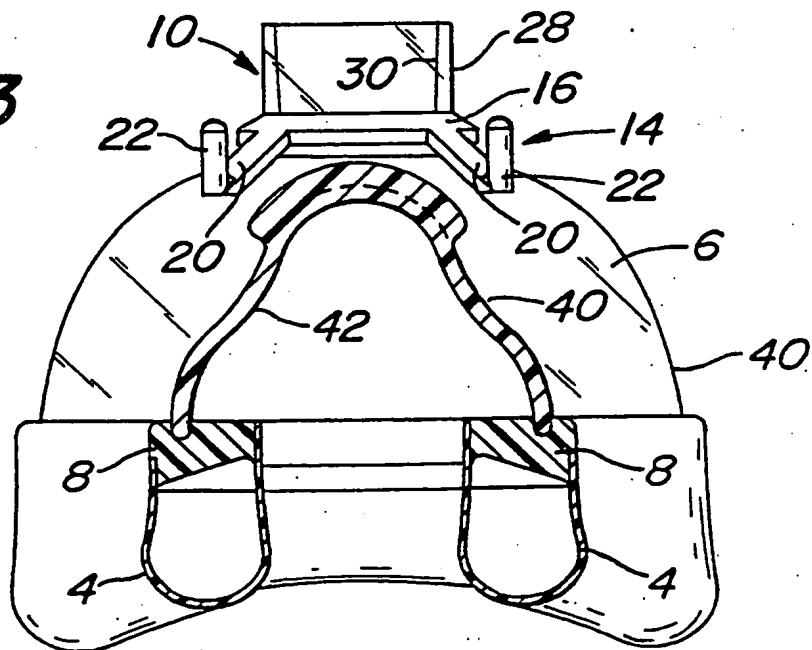
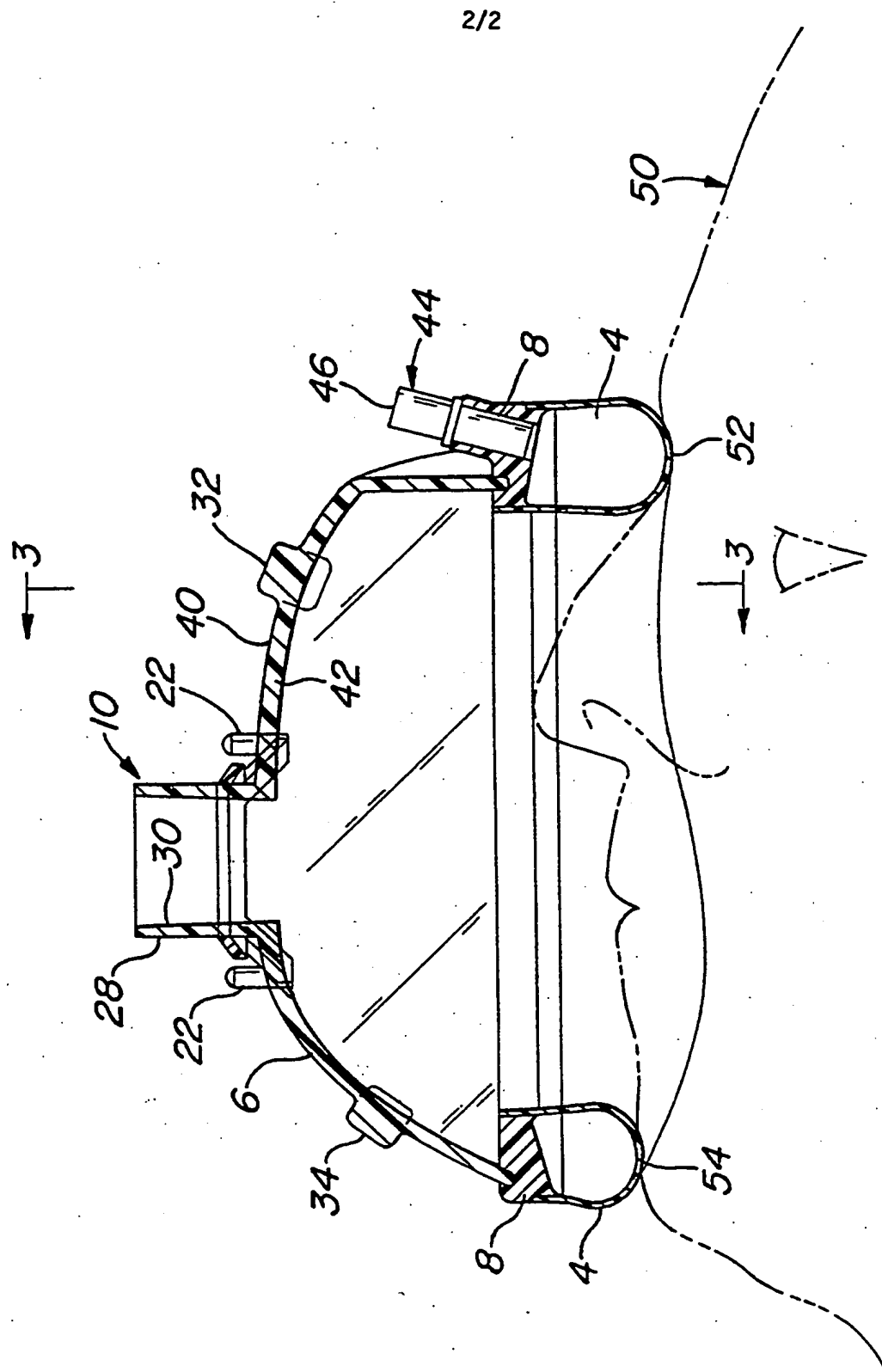


FIG. 2



# INTERNATIONAL SEARCH REPORT

Inter national Application No  
PCT/US 96/13612

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61M16/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 427 474 (SMITHS IND MEDICAL SYSTEMS INC) 15 May 1991	1-7
Y	see abstract; figures see column 3, line 5 - column 5, line 17	8-13
Y	GB,A,799 422 (BOC LTD) 6 August 1958 see page 2, line 49 - line 80; figures	8-13
A	US,A,5 121 745 (ISRAEL MICHAEL B) 16 June 1992 see abstract; figures see column 3, line 54 - column 4, line 16	3-5, 10-12

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

16 December 1996

Date of mailing of the international search report

23. 12. 96

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP-A- 0427473	15-05-91
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GB-A-799422		NONE	
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US-A-5121745	16-06-92	NONE	
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